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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,014	05/03/2005	Hideo Hosono	MOR-C469	7683
7590 08/29/2005			EXAMINER	
Lorusso & Loud 3137 Mount Vernone Avenue Alexandria, VA 22305			PEACE, RHONDA S	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/507,014

Applicant(s)

HOSONO ET AL.

Examiner

Rhonda S. Peace

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/8/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/16/04 & 4/13/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 2/16/2004 and 4/13/2005 were filed in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

### ***Inventorship***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Specification***

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because it exceeds the maximum length of 150 words. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 2874

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Saunders (US 6456771).

Saunders (US 6456771), as pertaining to claim 1, discloses an optical fiber grating, where the core **41** is free of germanium and has the grating written upon it, and also a cladding layer **42** is included (column 4 lines 33-40 and 53-67, Figure 3).

Regarding claim 1, applicant is claiming the product including the process of making the grating on the waveguide core by irradiating either femtosecond or picosecond laser radiations, and therefor are of "product-by-process" nature. The courts have been holding for quite some time that: the determination of the patentability of product-by-process claim is based on the product itself rather than on the process by which the product is made. In re Thrope, 777 F. 2d 695, 227 USPQ 964 (Fed. Cir. 1985); and patentability of claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself that must be new and unobvious. Applicant has chosen to claim the invention in the product form. Thus a prior art product that possesses the claimed product characteristics can anticipate or render obvious the claim subject matter regardless of the manner in which it is fabricated. A rejection based on 35 U.S.C. section 102 or alternatively on 35 U.S.C. section 103 of the status is eminently fair and acceptable. In re Brown and Saffer, 173 USPQ 685 and 688; In re Pilkington, 162 USPQ 147.

As such no weight is given to the process steps recited in claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saunders (US 6456771).

Regarding claims 2 and 3, Saunders describes the device as discussed above. In addition, Saunders discloses the use of fluorine within the cladding, as well as the core, during a multi-step process of creating the grating, and is added in order to lower the refractive index of the respective layer (column 4 lines 33-40, column 5 lines 1-7, Figure 3). As no values for the specific amount of fluorine to be added to either the core or cladding are discussed, Saunders covers all possible amounts of fluorine, including the wide ranges of 10-1000 ppm in the core and 1000-7000 ppm in the cladding. As well, it would have been obvious to one of ordinary skill in the art to add the appropriate

Art Unit: 2874

amount of fluorine needed in order to achieve the desired refractive index level of the given layer.

Pertaining to claim 6, in addition to the discussion above, Saunders also states that commercial silica core fibers may be used to create the grating discussed by Saunders. It is common knowledge that most commercial silica core fibers are provided with a coating layer on the exterior of the optical fiber for protection and strengthening purposes. Therefore, it would have been obvious to one of ordinary skill in the art to place a protective coating layer upon the exterior of the fiber, as it is present among many commercial fibers.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saunders (US 6456771) in further view of Imamura et al (US 6751380).

Speaking to claim 4, Saunders describes the device as discussed above. However, Saunders does not disclose the use of a UV-transmitting resin in making the cladding layer of the optical waveguide grating. It can be easily seen from Figure 3 of US 6456771 that the cladding layer 42 of Saunders does transmit ultraviolet radiation, thereby allowing a grating to be written upon the core of the fiber. Imamura et al (US 6751380) describes the use of a UV-transmitting resin to form an optical cladding layer (column 17 lines 3-13). It would have been obvious to apply the teachings of Imamura et al to the fiber of Saunders, as it allows the core of the fiber to be written upon without removal of the cladding layer, minimizing damage to the optical fiber, while providing a

Art Unit: 2874

protective layer against debris, also minimizing damage to the optical fiber (column 17 lines 3-13).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saunders (US 6456771) in further view of DiGiovanni et al (US 5802236).

Speaking to claim 5, Saunders describes the device as discussed above. However, Saunders does not disclose the existence of plural hollow holes within the cladding that extend parallel to the optical axis. DiGiovanni et al shows an optical fiber suitable for gratings (column 4 lines 3-8) with plural hollow holes within the cladding that extend parallel to the optical axis (column 3 lines 35-37, column 5 lines 6-8). It would have been obvious to one of ordinary skill in the art to combine the teachings of Saunders and DiGiovanni et al to form a microstructured fiber, which have numerous applications, including various types of sensors (column 1 lines 47-52).

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashyap (US 6104852) in further view of Dunn et al (US 6853785).

Regarding claim 7, Kashyap (US 6104852) teaches the formation of a grating upon an optical waveguide where the core is free of germanium (column 5 lines 49-59), and a cladding layer 3a is present (column 5 lines 60-63, Figure 7). While the main focus of Kashyap is to show the method of forming a grating upon the cladding, this method is capable of also forming a grating upon the core, since the only reason the core does not have a grating on it after the irradiation process is because of its low



Art Unit: 2874

photosensitivity (column 7 lines 7-11). Kashyap discusses the use of a hydrogen treatment in order to raise the photosensitivity of the core layer (column 5 lines 22-26), and describes the use of this method to form gratings in the prior art (column 1 lines 34-53). In addition to discussing how not only the cladding, but also the core, can be irradiated in order to form a grating, it also illustrates the use of two interfering beams of light in order to form the grating (column 6 lines 57-67, column 7 lines 1-4, Figure 6). However, Kashyap does not disclose the use of femtosecond or picosecond laser radiations as the interfering beams of light that will cause the grating. Dunn et al (US 6853785) discusses the use of a femtosecond beam to induce refractive index changes within a waveguide free of germanium (column 4 lines 29-44). It would have been obvious to one of ordinary skill to utilize the laser of Dunn et al with the optical fiber and laser configuration of Kashyap since the laser of Dunn et al has a variable peak power density, thereby allowing modification depending on the photosensitivity of the core to be irradiated.

Regarding claim 9, Kashyap and Dunn et al describe their respective methods, as discussed previously. However, Kashyap, in their discussion of the fiber previously mentioned, do not disclose the use of a protective coating through which irradiation can take place. Dunn et al discloses the formation of a protective coating around a waveguide to be irradiated, such that the coating does not need to be removed, and the irradiation process can be carried out through the coating, in order to form a grating upon the core (column 3 lines 19-23 and 35-37, column 4 lines 44-58 and 66-67, and column 5 lines 1-3). It would have been obvious to one of ordinary skill in the art to

Art Unit: 2874

combine the teaching of coating the optical fiber as per Dunn et al with the fiber of Kashyap as it provides protection for the fiber, and also minimizes production time, as the coating can be applied, and does not need to be removed at any point in the process (column 2 lines 26-30).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kashyap (US 6104852) in further view of Dunn et al (US 6853785), and in further view of Kazuaki et al (JP08-240729).

Addressing claim 8, Kashyap and Dunn et al disclose their respective methods as discussed above. However, neither Kashyap nor Dunn et al disclose the method of providing a flat part on the outside of the cladding through which irradiation takes place. Kazuaki et al (JP08-240729) explains the method of providing a flat part on the outside of the cladding through which the fiber is irradiated (paragraph 0003). It would have been obvious to one of ordinary skill in the art to combine the teachings of Dunn et al, Kashyap, and Kazuaki et al in order to provide the fiber of Kashyap with a flat portion through which irradiation will occur as this step eliminates birefringence and allows for light to be easily coupled through the side of the fiber (paragraph 0006).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kouta et al (US 2001/0021293) shows a method of modifying the

Art Unit: 2874

refractive index of an optical waveguide, having a core free of germanium, with a laser operating in the picosecond range.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda S. Peace whose telephone number is (571) 272-8580. The examiner can normally be reached on M-F (8-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272- 2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rhonda S. Peace  
Examiner  
Art Unit 2874



MICHELLE CONNELLY-CUSHWA  
PRIMARY EXAMINER